1855MNRAS..15..158H

in the Mercantile Navy List, and other encouragements are contemplated.

"Every exertion will be made at the office, not only to discuss and tabulate valuable observations, but to digest and render available, as soon as possible, such information as may tend immediately to the improvement of navigation.

"*February* 8, 1855."

On the Application of Photography to Astronomical Observations.

(*Letter from Sir John F. W. Herschel to Colonel Sabine.*)

"I consider it an object of very considerable importance to secure at some observatory, and indeed at more than one, in different localities, daily photographic representations of the sun, with a view to keep up a consecutive and perfectly faithful record of the history of the spots. So far as regards the general delineation of the whole disk, and the marking out on it, in reference to the parallel to the equinoctial passing through its centre, the places, sizes, and forms of the spots, there would need, I should imagine, no very powerful telescope,—quite the contrary; but it should be equatoreally mounted, and ought to have a clock motion in the parallel. The image to be impressed on the paper (or collodionized glass) should be formed not in the focus of the object-lens, but in that of the eye-lens, drawn out somewhat beyond the proper situation for distinct vision (and always to the same invariable distance to insure an equally magnified image on each day). By this arrangement, a considerably magnified image of the sun, *and also of any system of wires* in the focus of the object-glass, may be thrown upon the 'focussing-glass' of a camera-box adjusted to the eye-end of a telescope. By employing a system of spider-lines, parallel and perpendicular to the diurnal motion, and so disposed as to divide the field of vision into squares, say of 5′ in the side, the central one crossing the sun's centre (or rather as liable to no uncertainty, one of them being a tangent to its lower or upper limb), the place of each spot on the surface is, *ipso facto*, mapped down in reference to the parallel and declination circle, and its distance from the border, and its size measurable on a fixed scale.

"If large spots are to be photographed specially with a view to the delineation of their forms and changes, a pretty large object-glass will be required, and the whole affair will become a matter of much greater nicety; but for reading the daily history of the sun, I should imagine a 3-inch object-glass would be ample.

"The representations should, if possible, be taken daily, and the time carefully noted. As far as possible, they should be taken at the same hour each day; but in this climate, a clear interval, occurring when it may, had better be secured early in the day.

"Three or four observations in tropical climates, distant se-

Downloaded from http://mnras.oxfordjournals.org/ at New York University on July 11, 2015

© Royal Astronomical Society • Provided by the NASA Astrophysics Data System

1855MNRAS..15..158H

veral hours in longitude (suppose 3, at 8^h distance in longitude), each recording at, or nearly at noon, would, when the results were assembled, keep up a continuous history of the solar disk.

"With regard to proper preparation of paper, or the use of collodion acid, the photographic art is now so much advanced, that no difficulty can arise in fixing upon fitting preparations, or the manipulations necessary for multiplying them. But it would be very requisite that many impressions of each day's work should be taken and distributed, and an interchange kept up among observers.

"*April* 24, 1854."

Observations of Comet I. 1855. By Dr. Donati.

(*Communicated by Mr. Drach.*)

	Florence M.T.	Comet—Star. Δα.	Δδ.	Comet's Apparent R.A.	Decl.
1855.	h m s	m s	′ ″	° ′ ″	° ′ ″
Feb. 15	17 9 8·1	+4 7·02	−17 34·0	16 30 57·37	−28 12 31·8*
	17 37 38·5	−4 55·76	+ 1 57·7	16 30 59·30	−28 12 30·3†

* 5 comparisons with *a*. † 3 comparisons with *b*.

Adopted Apparent Places of Comparison Stars.

		R.A.	Decl.		
		h m s	° ′ ″		
a	Feb. 15	16 26 50·35	−27 54 57·8	Piazzi 113	Hora xvi.
b	—	18 35 55·06	−28 14 28·0	— 159	—

The comet was very faint.

On the Constitution of the Atmosphere, upon which Laplace's Table of Astronomical Refractions is founded. By Sir J. W. Lubbock, Bart. F.R.S.

"I have elsewhere given a table showing the constitution of the atmosphere, upon which Ivory's table of refractions, and also that upon which my own table of refractions, is founded.

"I have calculated the following table from the expressions given by Laplace in the fourth volume of the *Méc. Cél.* p. 265:—

Height in Miles.	Laplace. Pressure, inch.	Temp. Fahr.	Density.
0	29·94	32·00	1·00000
1	24·33	6·92	·85744
2	19·56	−14·14	·72283
3	15·57	32·60	·60010
4	12·31	47·24	·49114
5	9·60	60·23	·34709
10	2·54	111·21	·11743
15	·60	120·00	·02937
20	·13	139·70	·00674

Downloaded from http://mnras.oxfordjournals.org/ at New York University on July 11, 2015

© Royal Astronomical Society • Provided by the NASA Astrophysics Data System